PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#29 Req. for Recons. 6/27/01

In re the Application of

Masayuki KIKUSHIMA et al.

Application No.: 09/120,806

Filed: July 23, 1998

Group Art Unit: 2834

Examiner: M. Budd

Docket No.: 101151

For: PIEZO-ELECTRIC RESONATOR AND MANUFACTURING METHOD THEREOF

REQUEST FOR RECONSIDERATION

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

In reply to the Office Action mailed March 19, 2001, reconsideration of the above-identified application is respectfully requested in view of the following.

I. CLAIMS 1-6, 8, 10-13, 15-22, AND 30-37 ARE PENDING

The Office Action rejects claims 1-6 and 8 under 35 U.S.C. §102(a) over U.S. Patent No. 4,405,875 to Nagai. This rejection is respectfully traversed.

Nagai does not disclose a housing having an opening as recited in independent claims 1 and 8. Instead, Nagai discloses a transparent window 139 that lies in a metal frame 137, and a window 179 that is provided in a lid 173. This structure is different from the invention as recited in independent claims 1 and 8 which specifically recite an opening. As discussed in the specification on page 2, using a glass lid requires a high material cost and also a high cost for cutting the lid from a glass substrate to a rectangular shape of a lid at a high accuracy, resulting in a high cost. The glass window of Nagai is also subject to these

problems. For example, the glass window would have a high material cost and there would also be a high cost for cutting the glass window to fit into the lid or frame at a high accuracy. As discussed in the specification, fine dust is produced from glass lids. Thus, the glass window of Nagai would further be subject to this problem, i.e., would produce fine dust. Also in Nagai, sealing the portions of the window adjacent the frame or lid would be costly.

In the invention as recited in claims 1 and 8, after adjusting a frequency adjustment through an opening, a gas generated in the housing can be removed when the opening is sealed in a vacuum. So the degree of vacuum in the housing is improved and the resonator has high accuracy and stable characteristics. However, in Nagai, by adjusting a frequency of a resonator through a glass window, a gas is generated in a hermetically sealed housing and the degree of vacuum is deteriorated in the housing. Due to this gas generation, the characteristics of the resonator are deteriorated. Generally, frequency adjustment is accomplished by melting and removing an electrode film with a laser beam. A gas is generated from a metal or a metal oxide of the electrode film with the heat generated when melting and removing an electrode film with a laser beam.

The Office Action rejects claims 10-13 and 15-22 under 35 U.S.C. §103(a) over Nagai. As discussed above, claim 8 defines patentable subject matter. Claims 10-13 and 15-22, which depend from claim 8 therefore also define patentable subject matter.

In view of the foregoing, this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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JAO:MQB/crp

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